



April 11, 2002

TO: M Russell/R. Blair  
Northwest Region, NB82-55

FROM: *for* T.M. Allen/W.S. Hegge  
OSC Geotechnical Branch, 47365

SUBJECT: SR 543, OL-3500  
SR 5 to International Boundary Modifications  
Geotechnical Memorandum



EXPIRES 03-13-07

This memorandum represents geotechnical recommendations for the design and construction of signal pole foundations for the SR 543, SR 5 to International Boundary Modifications project. The signal poles will be located at the four corners of the intersections of SR 543 and Boblett Street at approximate Station 0+870 and H Street at approximate Station 1+250. Figures 1A and 1B show these two intersections. At this time, the signal pole locations have not been finalized.

The analyses, conclusions, and recommendations presented in this memorandum are based on the project description and site conditions that existed at the time of the field exploration. If different subsurface conditions are encountered or appear to be present, we should be contacted so that we can reevaluate our recommendations and assist you.

### FIELD EXPLORATIONS

Four test borings were conducted to evaluate subsurface conditions at the location of the two intersections. TH-1-01 and TH-2-01 were drilled in the vicinity of the intersection of SR 543 and Boblett Street. TH-3-01 and TH-4-01 were drilled in the vicinity of the intersection of SR 543 and H Street. The locations of these borings are shown on the site plans, Figures 1A and 1B in Appendix A. Standard penetrometer tests and soil samples were generally taken at variable intervals in each hole. The Unified Soil Classification System was used to classify the selected samples. Visual classification included consistency, color, water content, and major soil type. The edited boring logs are shown in Appendix B.

### **PROJECT SOIL CONDITIONS**

Based on our test borings, the area of the proposed signal pole foundations appears to be underlain by Bellingham Glaciomarine Drift (GMD), consistent with the geologic mapping for this area. The sediment that forms the GMD was derived from the melting of floating glacial ice and was subsequently deposited on the sea floor. Glaciomarine drift was deposited during the Everson Interstade approximately 11,000 to 12,000 years ago. The relative sea level was as high as Elevation 600 feet MSL. The thickness is indicated as a maximum of 70 feet, although greater thicknesses of this unit have been observed in Whatcom County. This soil unit typically consists of unsorted, unstratified silt and clay with varying amounts of sand, gravel, cobbles and occasional boulders. Localized sand stringers or "pods" can be encountered with the GMD deposit and are generally wet. The upper portion of this unit, sometimes to about 15 feet of depth, can be stiff as a result of desiccation or partial ice contact in upland areas and it typically grades to medium stiff/soft at depth. The material encountered in the borings falls into two broad categories, the stiff crust and the underlying soft GMD.

Groundwater was encountered at the following depths in the borings:

**Table 1 – Ground Water Depths**

<b>Boring Number</b>	<b>Ground Elevation (ft)</b>	<b>Depth to Ground Water (ft)</b>
TH-1-01	69.7	2.5
TH-2-01	71.0	2.6
TH-3-01	73.8	8.0
TH-4-01	75.6	1.0

The depth of 8 feet to ground water that was recorded in TH-3-01 was recorded during drilling and probably represents a transient condition. Based on the ground water data observed in the borings, the signal pole foundations should be designed for ground water at the ground surface.

### **GEOTECHNICAL RECOMMENDATIONS**

Due to the loose/soft nature of the soils, a special foundation design is required. We recommend that the signal pole foundations be supported on shafts. The shaft's lateral capacity should be computed using the P-Y iterative method. At the present time, we do not know the final configuration of the signal pole foundations. This, combined with the fact that only two of the four corners of each intersection were drilled, makes it difficult to provide specific recommendations for each signal pole location. Therefore we have provided a single recommendation for each intersection based upon the poorest geotechnical conditions observed

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at that intersection. We anticipate that some strain softening will occur during cyclic loading and therefore we have provided separate static and cyclic soil stiffness parameters. Cyclic loads are those imposed by repeated forces such as wind. We do not anticipate any significant amount of liquefaction within the site soils during a seismic event. Consequently, no reduced P-Y parameters are provided for a design earthquake event. P-Y curve input parameters to be used for the drilled shafts are presented in Appendix C.

### **CONSTRUCTION CONSIDERATIONS**

Shafts should be constructed in general accordance with WSDOT's drilled shaft GSP without the requirement for Crosshole Sonic Logging (CSL) testing. Due to the shallow level of the groundwater and to the very soft/loose nature of the soils at the proposed pole locations, wet shaft construction should be expected. As a result we recommend full depth temporary casing. The Bridge and Structures design office will need to add the drilled shaft GSP to the contract documents and determine the required temporary casing tip elevation once structural design is completed.

If you have questions or require further information, please contact William Hegge at (360) 709-5415.

TA:JC:ds/wh

Attachments: *Appendix A - Figures*

*Appendix B - Field Investigation*

*Appendix C - P-Y Input Parameters*

cc: Ahmad Schafi, Northwest Region NB82-120  
C. Johnson/H. Clayton, Northwest Region NB82-29  
T. Harrison, Northwest Region NB82-54  
Asad Bushnaq, Bridge and Structures 47340

## **APPENDIX A - FIGURES**

0 10 20  
SCALE IN METERS

BEGIN CONSTRUCTION  
SR 543 - L 0+740.000  
MP 0.20

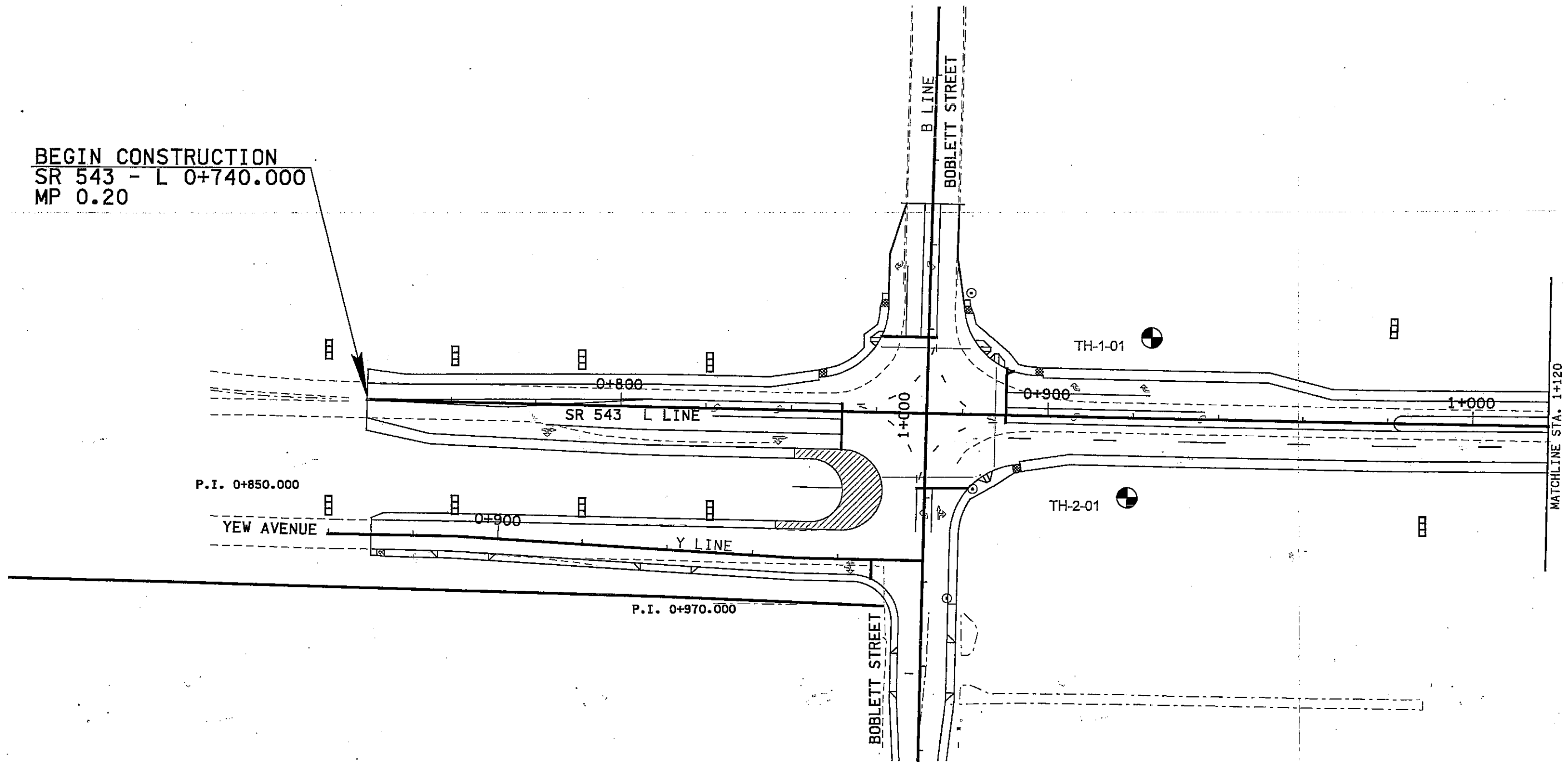



FIGURE 1A: SITE PLAN

JOB OL-3500 S.R. SR 543 C.S. _____	
SR 543	
SR 5 TO INTERNATIONAL BOUNDARY	
MP 0.20 TO MP 1.08	
	WASHINGTON STATE
	TRANSPORTATION COMMISSION
	DEPARTMENT OF TRANSPORTATION
	MATERIALS BRANCH
T. E. BAKER	MATERIALS ENGINEER
DATE 3/2002	SCALE 1=100 VERT. HORIZ.
SHEET ____ OF ____	DRAWN BY W.M.

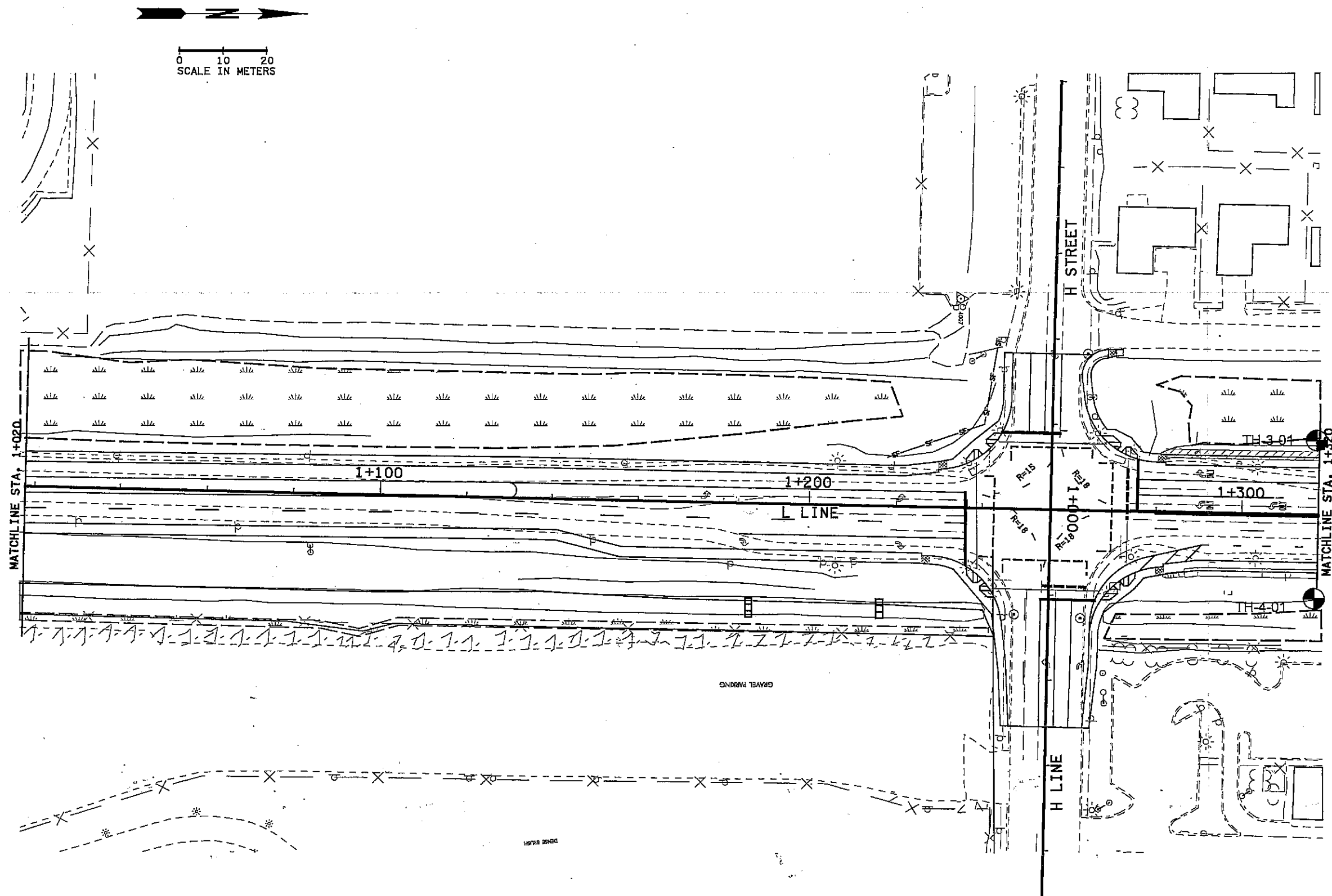



FIGURE 1B: SITE PLAN

JOB OL-3500 S.R. SR 543 C.S.	
SR 543	
SR 5 TO INTERNATIONAL BOUNDARY	
MP 0.20 TO MP 1.08	
	WASHINGTON STATE TRANSPORTATION COMMISSION DEPARTMENT OF TRANSPORTATION
	MATERIALS BRANCH
	T. E. BAKER MATERIALS ENGINEER
DATE 3/2002	
SCALE 1"=100'	VERT. HORIZ.
SHEET ____ OF ____	
DRAWN BY W.M.	

## **APPENDIX B – FIELD EXPLORATIONS**



# Test Boring Legend

## Sampler Symbols

	Standard Penetration Test
	Oversized Penetration Test (Dames & Moore, California)
	Shelby Tube
	Piston Sample
	Washington Undisturbed
	Vane Shear Test
	Core
	Becker Hammer
	Bag Sample

## Well Symbols

	Cement Surface Seal
	Piezometer Pipe in Granular Bentonite Seal
	Piezometer Pipe in Sand
	Well Screen in Sand
	Granular Bentonite Bottom Seal
	Inclinometer Casing in Concrete Bentonite Grout

## Laboratory Testing Codes

UU	Unconsolidated Undrained Triaxial
CU	Consolidated Undrained Triaxial
CD	Consolidated Drained Triaxial
UC	Unconfined Compression Test
DS	Direct Shear Test
CN	Consolidation Test
GS	Grain Size Distribution
MC	Moisture Content
SG	Specific Gravity
OR	Organic Content
DN	Density
AL	Atterberg Limits
PT	Point Load Compressive Test
SL	Slake Test
DG	Degradation
LA	LA Abrasion

## Soil Density Modifiers

Gravel, Sand & Non-plastic Silt		Elastic Silts and Clay	
SPT Blows/ft	Density	SPT Blows/ft	Consistency
0-4	Very Loose	0-1	Very Soft
5-10	Loose	2-4	Soft
11-24	Medium Dense	5-8	Medium Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

## Angularity of Gravel & Cobbles

Angular	Coarse particles have sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Coarse grained particles are similar to angular but have rounded edges.
Subrounded	Coarse grained particles have nearly plane sides but have well rounded corners and edges.
Rounded	Coarse grained particles have smoothly curved sides and no edges.

## Soil Moisture Modifiers

Dry	Absence of moisture; dusty, dry to touch
Moist	Damp but no visible water
Wet	Visible free water

## Soil Structure

Stratified	Alternating layers of varying material or color at least 6mm thick; note thickness and inclination.
Laminated	Alternating layers of varying material or color less than 6mm thick; note thickness and inclination.
Fissured	Breaks along definite planes of fracture with little resistance to fracturing.
Slickensided	Fracture planes appear polished or glossy, sometimes striated.
Blocky	Cohesive soil that can be broken down into smaller angular lumps which resist further breakdown.
Disrupted	Soil structure is broken and mixed. Infers that material has moved substantially - landslide debris.
Homogeneous	Same color and appearance throughout.

## HCL Reaction

No HCL Reaction	No visible reaction.
Weak HCL Reaction	Some reaction with bubbles forming slowly.
Strong HCL Reaction	Violent reaction with bubbles forming immediately.

## Degree of Vesicularity of Pyroclastic Rocks

Slightly Vesicular	5 to 10 percent of total
Moderately Vesicular	10 to 25 percent of total
Highly Vesicular	25 to 50 percent of total
Scoriaceous	Greater than 50 percent of total





Job No. 0L-3500 SR 543 HOLE No. TH-1-01

PROJECT I-5 to International Boundary Sheet 1 of 2

Inspector Brian Hilts

Station \_\_\_\_\_ Offset \_\_\_\_\_ Equipment CME 55 w/ autohammer

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_ Method Wet Rotary

Northing 323096.5 Easting 460797.6 Casing HQx32

Ground Elevation 69.8 (21.3 m) Start Date November 6, 2001 Completion Date November 6, 2001

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft	SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10 20 30 40							
				1		D-1		Fat CLAY, stiff, dark grayish brown, moist, Homogeneous, no HCl reaction, With hair roots and FeO stains. Length Recovered 1.5 ft, Length Retained 1.5 ft		
				3						
				7						
				(10)		D-2	GS	CH, MC=28%, PI=25 Fat CLAY, very stiff, dark grayish brown, moist, Homogeneous, no HCl reaction, with FeO stains throughout. Length Recovered 1.5 ft, Length Retained 1.5 ft	1/11/02 11/20/01	
				8			MC			
				9			PI			
				12						
				(21)						
1				3		D-3		CH, MC=28%, PI=25 Fat CLAY, very stiff, dark grayish brown, moist, Homogeneous, no HCl reaction, with FeO stains throughout. Length Recovered 1.5 ft, Length Retained 1.5 ft		
				4						
				6						
5				(10)		D-4	GS	Fat CLAY, stiff, dark grayish brown, moist, Homogeneous, no HCl reaction, with FeO stains and a trace of hair roots. Length Recovered 1.2 ft, Length Retained 1.2 ft		
				5			MC			
				4			PI			
				5						
2				(9)		D-5	GS	CH, MC=47%, PI=26 Fat CLAY, stiff, dark grayish brown, moist, Homogeneous, no HCl reaction		
				5			MC			
				6			PI			
				4						
				(10)						
				0		D-6	GS	Fat CLAY, stiff, grayish brown, moist, no HCl reaction, laminated with sand lenses. Length Recovered 1.5 ft, Length Retained 1.5 ft		
				0			MC			
				0			PI			
10				(0)		D-7		CH, MC=49%, PI=39 Fat CLAY, very soft, gray, moist, Homogeneous, no HCl reaction		
				0						
				0						
				0						
				(0)		D-8	GS	Length Recovered 1.5 ft, Length Retained 1.5 ft Fat CLAY, very soft, gray, moist, Homogeneous, no HCl reaction, moist to wet Length Recovered 1.5 ft, Length Retained 1.5 ft		
				0			MC			
				0			PI			
				(0)						
4				0		D-9		CH, MC=75%, PI=57 Fat CLAY, very soft, gray, moist, Homogeneous, no HCl reaction, moist to wet Length Recovered 1.5 ft, Length Retained 1.5 ft		
				0						
				0						
				(0)						
15				0						
				0						
				0						
				(0)						
5				0		D-10	GS	CH, MC=78%, PI=50 Fat CLAY, very soft, gray, moist, Homogeneous, no HCl reaction, moist to wet		
				0			MC			
				0			PI			
20				0						

SOIL 0L3500 I-5 TO INTERNATIONAL BOUNDARY.GPJ SOIL.GDT 4/11/02 12:35:42 P4



# LOG OF TEST BORING

Job No. 0L-3500

SR 543

HOLE No. TH-1-01

PROJECT I-5 to International Boundary

Sheet 2 of 2

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft				SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10	20	30	40							
							(0)				Length Recovered 1.5 ft, Length Retained 1.5 ft		
7							0						
25							0						
8							0						
							0						
9							(0)						
30													
10													
35													
11													
12													
40													
13													
45													

## LOG OF TEST BORING

Job No. 0L-3500

SR 543

HOLE No. TH-2-01

PROJECT I-5 to International Boundary

Sheet 1 of 2

Inspector Mike Mulhern

Station \_\_\_\_\_

Offset \_\_\_\_\_

Equipment BK-81 w/ autohammer

Latitude \_\_\_\_\_

Longitude \_\_\_\_\_

Method	Wet Rotary
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Northing 323103.4

Easting 460835.8

Casing HQ

Ground Elevation **71.0 (21.6 m)**

Start Date November 6, 2001

Completion Date November 6, 2001

[illegible]



Job No. 0L-3500

SR 543

HOLE No. TH-2-01

PROJECT I-5 to International Boundary

Sheet 2 of 2

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft				SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10	20	30	40							
							1 (1)	▲			Length Recovered 1.5 ft, Length Retained 1.0 ft		
7													
25							0 0 1 (1)	▼ ▲	D-8		Lean CLAY, very soft, gray, wet, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.0 ft		
8													
9							0 0 1 (1)	▼ ▲	D-9	GS MC PI	CL, MC=73%, PI=15 Lean CLAY, very soft, gray, wet, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.0 ft		
30													
											End of test hole boring at 30.5 ft below ground elevation.		
10											This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
35													
11													
12													
40													
13													
45													

SOIL\_0L3500 I-5 TO INTERNATIONAL BOUNDARY.GPJ Soil GDT 3/19/02 11:03:36 A3

Job No. 0L-3500

SR 543

HOLE No. TH-3-01

PROJECT I-5 to International Boundary

Sheet 1 of 6

Inspector **Hanning**

Station	Offset
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Equipment **CME 850 w/ autohammer**

Latitude Longitude

Method **Wet Rotary**

Northing **323480.8** Easting **460808.1**

Casing      HQ

Ground Elevation 73.8 (22.5 m) Start Date December 11, 2001

Completion Date December 12, 2001

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft				SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10	20	30	40							
1   													

Job No. 0L-3500SR 543HOLE No. TH-3-01PROJECT I-5 to International BoundarySheet 2 of 6

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft				SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10	20	30	40							
							0 0 (0)	▲		PI	Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
7													
25							0 0 0 0 (0)	▲	D-9		SILT with sand, very loose, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
8													
30							0 0 0 0 (0)	▲	D-10		SILT with sand, very loose, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
9								▲	S-11		SILT with sand, very loose, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 2.0 ft, Length Retained 2.0 ft		
10													
35								▲	S-12		No Recovery		
11								▲	S-13		SILT with sand, very loose, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 0.7 ft, Length Retained 0.7 ft		
40							0 0 0 0 (0)	▲	D-14	GS MC PI	CH, MC=35%, PI=38 Fat CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
12													
13													
45							0 0	▲	D-15		Fat CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction		



Job No. 0L-3500

SR 543

HOLE No. TH-3-01

PROJECT I-5 to International Boundary

Sheet 3 of 6

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft				SPT Blows/6" (N)	Sample Type Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10	20	30	40						
14							0 0 (0)			Length Recovered 1.3 ft, Length Retained 1.3 ft		
15							0 0 0 0 (0)	D-16		Fat CLAY, very soft, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
16												
55							1 2 1 1 (3)	D-17		Fat CLAY, very soft, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 0.8 ft, Length Retained 0.8 ft		
17												
18							0 0 0 0 (0)	D-18	GS MC PI	CL, MC=37%, PI=24 Lean CLAY, very soft, dark gray, moist, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
19												
65							0 0 0 0 (0)	D-19		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
20												
21							0 0	D-20		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction		
70												

SOIL 0L3500 I-5 TO INTERNATIONAL BOUNDARY.GPJ SOIL.GDT 4/11/02 12:35:45 P4

Job No. 0L-3500SR 543HOLE No. TH-3-01PROJECT I-5 to International BoundarySheet 4 of 6

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft				SPT Blows/6" (N)	Sample Type Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10	20	30	40						
							0 0 (0)			Length Recovered 1.5 ft, Length Retained 1.5 ft		
22												
75							0 0 0 1 (0)	D-21		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.2 ft, Length Retained 1.2 ft		
23												
24							0 0 0 1 (0)	D-22	GS MC PI	CL, MC=31%, PI=16 Lean CLAY with sand, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
80												
25												
85							0 0 0 0 (0)	D-23		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
26												
27							0 0 0 0 (0)	D-24		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.3 ft, Length Retained 1.3 ft		
90												
28												
95							0 0	D-25		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction		





# LOG OF TEST BORING

Job No. 0L-3500

SR 543

HOLE No. TH-3-01

PROJECT I-5 to International Boundary

Sheet 5 of 6

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft				SPT Blows/6" (N)	Sample Type Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10	20	30	40						
29							2 3 (2)			Length Recovered 1.0 ft, Length Retained 1.0 ft		
30							0 0 1 2 (1)	D-26	GS MC PI	CL, MC=31%, PI=28 Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.3 ft, Length Retained 1.3 ft		
31												
32							0 0 2 3 (2)	D-27		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
33												
34							0 0 1 3 (1)	D-28		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.3 ft, Length Retained 1.3 ft		
35							0 0 1 2 (1)	D-29		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.3 ft, Length Retained 1.3 ft		
36												
120							0 0	D-30	GS MC	CL, MC=30%, PI=10 Lean CLAY, very soft, dark gray, wet, Homogeneous, no		



Job No. OL-3500

SR 543

HOLE No. TH-3-01

PROJECT I-5 to International Boundary

Sheet 6 of 6

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft				SPT Blows/6" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10	20	30	40							
37							1 3 (1)	▲		PI	HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
38	125						0 0 1 3 (1)	▲	D-31		Lean CLAY, very soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.0 ft, Length Retained 1.0 ft		
39													
130							0 1 3 3 (4)	▲	D-32		Lean CLAY, soft, dark gray, wet, Homogeneous, no HCl reaction Length Recovered 1.5 ft, Length Retained 1.5 ft		
40													
41	135										End of test hole boring at 131 ft below ground elevation.  This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
42													
140													
43													
44													
145													

Job No. 0L-3500

SR 543

HOLE No. TH-4-01

PROJECT I-5 to International Boundary

Sheet 1 of 2

Inspector Brian Hilts

Station \_\_\_\_\_

Offset \_\_\_\_\_

Equipment CME 55 w/ autohammer

Latitude

Longitude \_\_\_\_\_

Method Wet Rotary

Northing 323479.5

Easting 460845.2

Casing HQx32

Ground Elevation 75.6 (23.0 m)

Start Date November 7, 2001

Completion Date November 7, 2001

[illegible]



Job No. 0L-3500

SR 543

HOLE No. TH-4-01

PROJECT I-5 to International Boundary

Sheet 2 of 2

Depth (ft)	Meters (m)	Profile	Standard Penetration Blows/ft				SPT Blows/5" (N)	Sample Type	Sample No. (Tube No.)	Lab Tests	Description of Material	Groundwater	Instrument
			10	20	30	40							
7							0 0 0 (0)		D-11	GS MC PI	CL, MC=31%, PI=12 Lean CLAY, very soft, gray, wet, Laminated, no HCl reaction, with sand lenses Length Recovered 1.0 ft, Length Retained 1.0 ft		
25							0 0 0 0 (0)		D-12		Lean CLAY, very soft, gray, wet, Homogeneous, no HCl reaction Length Recovered 2.0 ft, Length Retained 1.5 ft		
30											NOTE: At approx. 14' we lost all water return and got a little back every so often. The soil is very soupy and difficult to install a piezometer.  End of test hole boring at 29.5 ft below ground elevation. This is a summary Log of Test Boring. Soil/Rock descriptions are derived from visual field identifications and laboratory test data.		
35													
40													
45													

SOIL 0L3500 I-5 TO INTERNATIONAL BOUNDARY.GPJ SOIL.GDT 3/19/02 11:03:47 AM